

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

O. M. BEKETOV NATIONAL UNIVERSITY OF URBAN ECONOMY IN KHARKIV

LINGUISTIC CENTER “RIAN”, USA

CANADIAN COLLEGE OF ENGLISH LANGUAGE, CANADA

TESOL-UKRAINE

CENTER OF FOREIGN LANGUAGES (NUUE)

YOUNG RESEARCHERS IN THE GLOBAL WORLD: VISTAS AND CHALLENGES

PROCEEDINGS OF THE IIIrd FORUM FOR YOUNG RESEARCHERS

(May 19, 2017)

KHARKIV – O. M. Beketov NUUE – 2017

УДК [339.9:303.8-053.81](063)
Y70

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Young Researchers in the Global World : Vistas and Challenges : Proceedings of Y70 the IIIrd Forum for Young Researchers, Kharkiv, May 19, 2017 / O. M. Beketov National University of Urban Economy in Kharkiv, Canadian College of English Language (Canada) and oth. – Kharkiv : O. M. Beketov NUUE in Kharkiv, 2017. – 311 p.

ISBN 978-966-695-429-2

Збірник містить матеріали форуму «Молоді дослідники у глобалізованому світі: перспективи та виклики», що відбувся в травні 2017 року в Харківському національному університеті міського господарства імені О. М. Бекетова на базі кафедри іноземних мов.

УДК [339.9:303.8-053.81](063)

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ISBN 978-966-695-429-2

SYNERGETIC THEORY FOR PROJECT APPROACH TO MANAGEMENT OF SUSTAINABLE DEVELOPMENT OF THE CITY

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The current trend of global transition to information technologies can be explained by the fact that information has become a major resource in the process of social development. The city is a complex nonlinear system, which is affected by a wide range of factors of internal and external environment. Using of classical methodologies and modern tools as well as management strategies for sustainable development effectively applied in developed countries do not always have positive qualitative and quantitative results in national and local governing. Determination of false priorities and lack of physical and mental processes of methodologies adaptation in development of management strategies retards the sustainable development of the city. Therefore, there is a need to use new methods based on a new paradigm foundations of modern strategic management.

The project approach is widely used due to the transparency and flexibility of its methodology. Fundamental integration processes of initiation, planning, implementation, monitoring and control, and the completion can be seen in the methodologies developed for management of both small IT projects (SCRUM, TenStep) and large projects and programs for sustainable development of cities (PMBok). Using a set of CMMI methodologies (Capability Maturity Model Integration) [1] as a method for improving processes and determination of the levels of maturity allows to define a clear goal and targets to achieve it. As the result, the organization should reach the last level, i.e. which is characterized by the processes of self-organization. This methodology as well as the project approach in general is widely used in the domestic IT sector, but they are not used at the moment for management of such complex non-linear systems as a city. Synergetic theory will become an impetus for using project approach by state and local governments that will give an opportunity to clearly justify the process of managing strategies for sustainable development of cities.

The synergetic theory occurred recently at the intersection of two theories, namely, the "chaos theory" and the "nonlinear dynamics". The chaos theory studies the impact of chaos on the behavior of complex systems. The nonlinear dynamics studies the behavior of complex nonlinear systems [2]. Synergetics acts as a symbiosis of the two theories and studies the state and behavior of complex nonlinear systems in time and space.

As noted, the city is a complex nonlinear and open system. The openness of the city is characterized by the fact that it has sources and drains, entrances and exits. External environment of any system involves uncertainties and eventualities called "fluctuations". The existence of these factors provoke the emergence of new high-quality features that can affect the system negatively and positively. Due to this

openness of the system, according to the concept of AJ Toynbee "challenge-response" [3] the city is able to process responses to external stimuli, i.e. self-organization.

The city, like most complicated systems that exist in nature is non-linear. Multivariability of managerial decisions is explained by the physical meaning of nonlinearity, "a large number of solutions of nonlinear equations corresponds to a large number of ways for the system evolution described by this equation" [4]. At critical stages – "bifurcation points" the development of a system can be done in different directions. In formulating the strategy for sustainable development of the city a conceptual trend line is formed due to the determined choice of alternatives called "structure-attractors."

Using the project approach allows to reach a high level of efficiency in determining the direction of strategic development at bifurcation points by involving the methodology of projects and PMBOK programs management focused on improving quality assurance processes - CMMI. Projects as parts of the sustainable development strategy of the city, have a serial connection between each other: initiation – completion - initiation. Their appearance is explained by the theory of "challenge-development" as a response to the opportunities and risk factors that characterize the outer environment of the system. Application of SWOT-analysis provides an opportunity to identify the ways for solutions of the problems of sustainable development due to the analysis of qualitative and quantitative parameters of the system.

Therefore, management processes of the strategy for sustainable development of cities are able to adapt the methodology of the project approach by determination of structure-attractors and their self-organization. Using project management methodologies that meet both structuring of the projects (PMBOK) and their improvement and optimization (CMMI) as well as the synergetic theory with definition of bifurcation points and vectors for development is appropriate in the transitive Ukrainian environment.

Reference

1. Mary Beth Chrissis, Mike Konrad, Sandy Shrum, CMMI: Guidelines for Process Integration and Product Improvement, Addison-Wesley, 2007, 676 p.

TSERKVAS EN BOIS DE LA RÉGION DES CARPATES EN POLOGNE ET EN UKRAINE

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Située aux confins orientaux de l'Europe centrale, dans la région des montagnes des Carpates de Pologne et d'Ukraine, les seize tserkvas (églises) en bois sont des exemples exceptionnels de ce qui fut une tradition ecclésiastique orthodoxe

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